

CLAIMS

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. An inductively powered lamp assembly comprising:

5 an inductive secondary to receive power from an inductive primary, the inductive primary having a reactance;

a lamp disposed in series with the inductive secondary, the lamp having an impedance;
and

a capacitor disposed in series with the inductive secondary and the lamp, the capacitor
10 selected to have a reactance that is substantially equal to or slightly less than the sum of the impedance of the lamp and the reactance of the inductive secondary, whereby the capacitor, the lamp and the inductive secondary operate substantially at resonance.

2. The inductively powered lamp assembly of claim 1 wherein the capacitor, the lamp and the inductive secondary operate substantially in resonance when the lamp and the inductive
15 secondary are substantially at operating temperature.

3. The inductively powered lamp assembly of claim 2 wherein the inductive secondary is a coil of LITZ wire.

4. The inductively powered lamp assembly of claim 2 wherein the inductive secondary is a coil of magnet wire.

20 5. The inductively powered lamp assembly of claim 3 wherein the inductively powered lamp assembly includes a closed sleeve surrounding and fully enclosing the inductive secondary, the lamp and the capacitor, the sleeve being unpenetrated.

6. The inductively powered lamp assembly of claim 5 wherein the closed sleeve is substantially transparent to light of a desired wave length.
7. The inductively powered lamp assembly of claim 3 wherein the lamp includes a lamp sleeve, the capacitor and the inductive secondary being fully enclosed within the lamp sleeve, whereby the lamp sleeve is unpenetrated.
8. The inductively powered lamp assembly of claim 7 wherein the lamp sleeve is substantially transparent to light of a desired wave length.
9. The inductively powered lamp assembly of claim 8 wherein the lamp is further defined as an incandescent lamp.
10. The inductively powered lamp assembly of claim 8 wherein the lamp is further defined as an electric discharge lamp.
11. The inductively powered lamp assembly of claim 8 wherein the lamp is further defined as a light emitting diode.
12. The inductively powered lamp assembly of claim 3 wherein the inductive secondary is coaxial with the lamp.
13. An inductively powered lamp assembly comprising:
an inductive secondary to receive power from an inductive primary, the inductive secondary having a reactance;
a lamp disposed in series with the inductive secondary, the lamp having an impedance that is substantially equal to the reactance of the inductive secondary; and

a capacitor disposed in series with the inductive secondary and the lamp, the capacitor having a reactance that is substantially equal to or slightly less than the sum of the impedance of the lamp and the reactance of the inductive secondary.

14. The inductively powered lamp assembly of claim 13 wherein the reactance of the

5 inductive secondary is further defined as an operating reactance, wherein the impedance of the lamp is further defined as an operating impedance, and wherein the lamp and the inductive secondary operate substantially in resonance when the lamp and the inductive secondary are substantially at operating temperature.

15. The inductively powered lamp assembly of claim 14 wherein the inductive secondary is

10 further defined as a coil of LITZ wire.

16. The inductively powered lamp assembly of claim 15 wherein the inductive secondary is further defined as a coil of magnet wire.

17. The inductively powered lamp assembly of claim 15 wherein the inductively powered lamp assembly includes a closed transparent sleeve surrounding and fully enclosing the

15 inductive secondary, the capacitor and the lamp, the closed transparent sleeve being unpenetrated.

18. The inductively powered lamp assembly of claim 17 wherein the lamp includes a lamp sleeve, the lamp sleeve being substantially transparent to light of a desired wave length, the inductive secondary being fully enclosed within the lamp sleeve, whereby the lamp sleeve is

20 unpenetrated.

19. The inductively powered lamp assembly of claim 18 wherein the lamp is further defined as an incandescent lamp.

20. The inductively powered lamp assembly of claim 18 wherein the lamp is further defined as an electric discharge lamp.
21. The inductively powered lamp assembly of claim 15 wherein the inductive secondary is coaxial with the lamp.
- 5 22. An inductively powered lamp assembly comprising:
- a lamp circuit including:
 - an inductive secondary to receive power from an inductive primary;
 - a lamp disposed in series with the inductive secondary; and
 - a transparent sleeve entirely enclosing the lamp circuit.
- 10 23. The inductively powered lamp assembly of claim 22, wherein the transparent sleeve defines a chamber surrounding the lamp circuit, the chamber being partially evacuated.
24. The inductively powered lamp assembly of claim 22, wherein the transparent sleeve defines a chamber surrounding the lamp circuit, further including a gas filling the chamber, the gas selected to provide a desired level of heat conduction for the lamp.
- 15 25. The inductively powered lamp assembly of claim 24 wherein the lamp circuit further includes a capacitor in series with the lamp and the inductive secondary, the capacitor being entirely contained within the transparent sleeve.
26. An inductively powered lamp assembly comprising:
- an electric-discharge lamp having a pair of electrodes;
 - 20 an inductive secondary to receive power from an inductive primary, each of the electrodes including a first lead electrically connected to the inductive secondary; and

a magnetic starter switch operable between open and closed positions in response to a magnetic field, each of the electrodes including a second lead electrically connected to the magnetic starter switch, the magnetic starter switch shorting the electrodes across the inductive secondary when in the closed position to preheat the electric-discharge lamp.

5 27. The inductively powered lamp assembly of claim 26 wherein the magnetic starter switch is operable in response to a magnetic field oriented substantially perpendicularly to a magnetic field powering the inductive secondary.

28. An inductively powered electric discharge lamp assembly comprising:

10 a lamp, the lamp having a first electrode, a second electrode and an electric-discharge gas contained within a lamp sleeve;

an inductive secondary to receive power from an inductive primary;

an electrical connector connecting the inductive secondary to the first electrode, whereby the inductive secondary provides power to the first electrode when subjected to an appropriate electromagnetic field generated by an inductive primary; and

15 wherein the inductive secondary and the electrical connector are enclosed within the lamp sleeve, whereby the lamp is self-contained with the lamp sleeve being fully sealed and unpenetrated.

29. The inductively powered electric discharge lamp assembly of claim 28, wherein the inductive secondary has a reactance, the lamp having an impedance that is substantially equal
20 to the reactance of the inductive secondary, the capacitor having a reactance that is substantially equal to or slightly less than the sum of the impedance of the lamp and the reactance of the inductive secondary.

30. The inductively powered electric discharge lamp assembly of claim 29 further comprising a magnetic starter switch being operable between an open position and a closed position in response to a magnetic field, the magnetic starter switch shorting the first electrode and the second electrode across the inductive secondary when in the closed position to preheat the lamp.

31. An inductively powered incandescent lamp assembly comprising:
an incandescent lamp, the incandescent lamp having a filament contained within a lamp sleeve;

an inductive secondary to receive power from an inductive primary;

an electrical connector for connecting the inductive secondary to the filament, whereby the inductive secondary provides power to the filament when subjected to an appropriate magnetic field by an inductive primary; and

wherein the inductive secondary and the electrical connector are enclosed within the lamp sleeve, whereby the incandescent lamp is self-contained with the lamp sleeve being fully sealed and unpenetrated.

32. The inductively powered incandescent lamp assembly of claim 31 further comprising a capacitor connected in series with the inductive secondary and the incandescent lamp, wherein the inductive secondary has a reactance, the incandescent lamp having an impedance that is substantially equal to the reactance of the inductive secondary, the capacitor having a reactance that is substantially equal to or slightly less than the sum of the impedance of the incandescent lamp and the reactance of the inductive secondary.

33. An inductively powered electric-discharge lamp assembly comprising:

first and second secondaries;

a lamp having first and second electrodes, the first electrode being electrically connected to the first secondary, the second electrode being electrically connected to the second secondary;

5 a capacitor connected in series between the first secondary and the second secondary;
and

a starter for preheating the first electrode and the second electrode, the starter electrically connected in series between the first electrode and the second electrode.

34. The inductively powered electric-discharge lamp assembly of claim 33 wherein:

10 each of the first secondary and the second secondary includes first and second leads;

each of the first electrode and the second electrode includes first and second leads, the first lead of the first electrode being electrically connected to the first lead of the first secondary, the first lead of the second electrode being electrically connected to the first lead of the second secondary;

15 the capacitor being connected in series between the second lead of the first secondary and the second lead of the second secondary; and

the starter being electrically connected in series between the second lead of the first electrode and the second lead of the second electrode.

35. The inductively powered electric-discharge lamp assembly of claim 34 wherein the first

20 secondary and the second secondary have a combined reactance, the lamp having an impedance that is substantially equal to the combined reactance, the capacitor having a reactance that is

substantially equal to or slightly less than a sum of the impedance of the lamp and the combined reactance.

36. An inductively powered electric-discharge lamp assembly comprising:

first and second secondaries;

5 a lamp, the lamp having a first electrode and a second electrode, the first electrode being electrically connected to the first secondary, the second electrode being electrically connected to the second secondary;

a capacitor connected in series between the first electrode and the second electrode; and

a first remotely operable switch and a second remotely operable switch for preheating

10 the electrodes, the first remotely operable switch electrically connected in series between the first electrode and the first secondary to selectively short the first electrode across the first secondary, the second remotely operable switch electrically connected in series between the second electrode and the second secondary to selectively short the second electrode across the second secondary.

15 37. The inductively powered electric-discharge lamp assembly of claim 36 wherein:

each of the first secondary and the second secondary includes first and second leads;

each of the first electrode and the second electrode includes first and second leads, the

first lead of the first electrode being electrically connected to the first lead of the first

secondary, the first lead of the second electrode being electrically connected to the first lead of

20 the second secondary;

the capacitor being connected in series between the second lead of the first electrode and the second lead of the second electrode;

the first switch electrically connected in series between the second lead of the first electrode and the second lead of the first secondary; and

the second switch electrically connected in series between the second lead of the second electrode and the second lead of the second secondary.

5 38. The inductively powered electric-discharge lamp assembly of claim 36 wherein the first secondary and the second secondary have a combined reactance, the lamp having an impedance that is substantially equal to the combined reactance, the capacitor having a reactance that is substantially equal to or slightly less than the sum of the impedance of the lamp and the combined reactance of the secondaries.

10 39. An inductively powered electric-discharge lamp assembly comprising:

first and second secondaries;

a lamp having first and second electrodes, the first electrode being electrically connected to the first secondary, the second electrode being electrically connected to the second secondary;

15 a capacitor connected in series between the first electrode and the second electrode; and

a first switch and a second switch for preheating the electrodes, the first switch electrically connected in series between the first electrode and the first secondary to selectively short the first electrode across the first secondary, the second switch electrically connected in series between the second electrode and the second secondary to selectively short the second

20 electrode across the second secondary.

40. The inductively powered electric-discharge lamp assembly of claim 39 wherein:

each of the first secondary and the second secondary includes first and second leads;

each of the first electrode and the second electrode includes first and second leads, the first lead of the first electrode being electrically connected to the first lead of the first secondary, the first lead of the second electrode being electrically connected to the first lead of the second secondary;

5 the capacitor being connected in series between the second lead of the first electrode and the second lead of the second electrode;

 the first switch electrically connected in series between the second lead of the first electrode and the second lead of the first secondary; and

 the second switch electrically connected in series between the second lead of the second electrode and the second lead of the second secondary.

10 41. The inductively powered electric-discharge lamp assembly of claim 40 wherein the first secondary and the second secondary have a combined reactance, the lamp having an impedance that is substantially equal to the combined reactance of the secondaries, the capacitor having a reactance that is substantially equal to or slightly less than the impedance of the lamp and the combined reactance of the first secondary and the second secondary.

 42. An inductively powered electric-discharge lamp assembly comprising:

 first and second secondaries;

 a lamp, the lamp having a first electrode and a second electrode, the first electrode being electrically connected to the first secondary, the second electrode being electrically connected to the second secondary;

first and second capacitors, the first capacitor connected in series between the first electrode and the first secondary, the second capacitor connected in series between the second electrode and the second secondary; and

a first switch and a second switch for preheating the electrodes, the first switch electrically connected in series between the first electrode and the first secondary to selectively short the first electrode across the first secondary, the second switch electrically connected in series between the second electrode and the second secondary to selectively short the second electrode across the second secondary.

43. The inductively powered electric-discharge lamp assembly of claim 42 wherein:

each of the first secondary and the second secondary includes first and second leads;

each of the first electrode and the second electrode includes first and second leads, the first lead of the first electrode being electrically connected to the first lead of the first secondary, the first lead of the second electrode being electrically connected to the first lead of the second secondary;

the first capacitor being connected in series between the first lead of the first electrode and the first lead of the first secondary;

the second capacitor being connected in series between the first lead of the second electrode and the first lead of the second secondary;

the first switch means being electrically connected in series between the second lead of the first electrode and the second lead of the first secondary; and

the second switch means being electrically connected in series between the second lead of the second electrode and the second lead of the second secondary.

44. The inductively powered electric-discharge lamp assembly of claim 43 wherein the lamp has an impedance, a combined reactance of the first secondary and the second secondary being substantially equal to the impedance of the lamp, a combined reactance of the first capacitor and the second capacitor being substantially equal to or slightly less than the
5 impedance of the lamp and the combined reactance of the first secondary and the second secondary.

45. The inductively powered lamp assembly of claim 17 wherein the sleeve is a substantially flexible plastic tube, opposite ends of the substantially flexible plastic tube being sealed to provide a fully sealed enclosure.

10 46. The inductively powered lamp assembly of claim 45 wherein the opposite ends of the substantially flexible plastic tube are crimped.

47. The inductively powered lamp assembly of claim 46 wherein the substantially flexible plastic tube is further defined as a Teflon tube.